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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,426	11/20/2003	Karim S. Boutros	PD-200300A (BOE 0463 PA)	9643
7590	12/21/2004		EXAMINER KANG, DONGHEE	
Steven W. Hays Suite 250 28333 Telegraph Road Southfield, MI 48034			ART UNIT 2811	PAPER NUMBER

DATE MAILED: 12/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/718,426

Applicant(s)

BOUTROS ET AL.

Examiner

Donghee Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 9-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 23-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continuing Domestic Data

1. Acknowledgment is made that this application is a continuation-in-part of Application Serial No. 09/850,773, filed 8 May 2001.

Election/Restrictions

2. Claims 9-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected embodiment, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 11-02-04.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims.

Therefore, the limitation "said device selected from the group consisting of transistors, *resistors and diodes*" in claims **1, 5, 23** must be shown or the feature(s) canceled from the claim(s).

The limitation "*a second device* formed on another of said at least one layer of said group III-V" in claim **5** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims **1-8 & 23-26** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim **1 & 23**: the limitation "a device formed on one of said at least one layer of said group III-V semiconductor material" is not clear as where the device is positioned in the device. The group III-V semiconductor materials 18 are deposited successively to form the desired device structure. There is no device formed on the group III-V semiconductor materials.

Re claim 5: the limitation "a second device formed on another of said at least one layer of said group III-V semiconductor material" is unclear as where the second device is positioned in the device. The group III-V semiconductor materials 18 are deposited successively to form the desired device structure. There is no second device formed on the group III-V semiconductor materials.

Claims 2-8 & 24-26 are rejected because each includes the limitations of independent claims 1 & 23.

The examiner interprets a device formed on one of said at least one layer of group III-V material as a device formed from one of said at least one layer of group III-V material for further prosecution.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1-4, 6-8 & 23-26 are rejected under 35 U.S.C. 102(a) as being anticipated by Ermer et al. (US 6,380,601).

Re claims 1-2 & 24, Ermer et al. teach a semiconductor device comprising
(Fig.2):

a germanium substrate (22) having a p-type of doping (28); a nucleating layer (34) of group III-V materials (GaInP) disposed upon said germanium substrate, wherein the deposition of said nucleation layer also forms a germanium junction forming layer

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(30) on a portion of said germanium substrate (Col.5, lines 8-13)said germanium junction forming layer being actively doped with a constituent element (phosphorus) of said nucleation layer, said actively doped germanium junction forming layer having an opposite doping (n-type) to said first type of doping; at least one layer of a group III-V semiconductor material (36, 42a, 42b.....50) adjacent to and disposed upon said nucleation layer; a device is formed from said at least one layer of the group III-V semiconductor material, said device selected from the group consisting of transistors, resistors and diodes. See also Col.2, line 53-Col.5, line 17.

Re claims **3-4, 23, & 25-26**, Ermer et al. do not explicitly teach said germanium junction forming layer also being actively doped with a second constituent element from said at least one layer of said group III-V semiconductor material. However, this feature is inherent in Ermer's device because Ermer's device is identical to the claimed structure and both structures are containing same materials (GaAs).

Re claim **6**, Ermer et al. teach the level of said first dopant is a function of a desired frequency operating range and photo-response characteristics of the semiconductor device.

Re claims **7-8**, Ermer et al. teach said nucleation layer (InGaP) is lattice-matched to said germanium substrate.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Stan et al. (US 2002/0040727).

Fatemi et al. (US 2004/0084694).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghee Kang whose telephone number is 571-272-1656. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Donghee Kang, Ph.D.
Primary Examiner
Art Unit 2811

dhk